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— Thomas Whittaker has just published a new edition, with some changes, of Miss Anne Ayres' "Life and Work of William Augustus Muhlenberg."

— Mr. Warren K. Moorehead announces a new work on Ohio Valley earthworks. This work contains 41 full page illustrations made from photographs taken in the field, and a detailed account of exploration in the mounds and graves of Fort Ancient.

— Messrs. Ginn & Co. announce as ready, "Elementary Mathematical Tables," by A. Macfarlane, D.Sc., LL.D., professor of physics in the University of Texas. This collection of tables contains logarithms, antilogarithms, addition logarithms, subtraction logarithms, logarithmic sines and cosines, logarithmic tangents and cotangents, natural sines and cosines, natural tangents and cotangents, natural secants and cosecants, arcs, reciprocals, squares, cubes, square roots, cube roots, circumferences, circular areas, spherical contents, powers, constants, hyperbolic logarithms, exponentials, divisors, least divisors, interest tables, first nine multiples of numbers up to 1000, with a large number of auxiliary tables. The tables are mostly four-place: they have a uniform decimal arrangement similar to that of seven-place logarithmic tables; they are mostly synoptic, are provided with differences and proportional parts, and are arranged so that the function may be read off for any position of the decimal point in the argument. The tables are designed to be useful not only in computing and in the graphic method, but also in the teaching of arithmetic and in the illustration of the theorems of algebra.

— Mr. Gordon L. Ford of Brooklyn has in press a number of interesting unpublished agreements between Washington and his overseers and workmen, throwing much light upon the management of his estates, as well as on the "labor question" of colonial Virginia. The agreements are copied from the originals in Washington's writing, and all date before the Revolution. In this volume will also be included a correspondence that Washington had in 1774 with a number of merchants and others, concerning a scheme he entertained of importing German Palatines to settle upon his western lands, and one of Washington's advertisements for runaway servants. Very little of this material has been published heretofore, and "Washington as an Employer and Importer of Labor" will present a new phase of his character. The edition will be limited to five hundred copies.

— M. Rénan is at work on the fourth volume of his "History of Israel." He is also correcting, says the New York *Tribune*, the proof-sheets of a new book to be entitled "The Future of Science." It is an essay entirely written as long ago as 1848, and deals, among other topics, with the theory of development subsequently enunciated by Darwin. In various other matters M. Rénan is shown to have anticipated subsequent discoveries in the fields of knowledge, and to have indicated the general direction to which science was tending. He has neither added to nor excised a single passage from his earlier essay, the only alterations introduced being those of style.

LETTERS TO THE EDITOR.

*.*Correspondents are requested to be as brief as possible. The writer's name is in all cases required as proof of good faith.

The editor will be glad to publish any queries consonant with the character of the journal.

On request, twenty copies of the number containing his communication will be furnished free to any correspondent.

Electric Eccentricities.

DURING the great fire that raged over northern Wisconsin in 1871, and which wiped out not only the prosperous village of Pestigo, but, in the aggregate of farmhouses, half a dozen villages like Pestigo, there were many evidences of electrical phenomena present. The flames were seen to possess that sudden rapidity of action which only electricity can impart. They would leap over wide spaces with the greatest rapidity, leaving many objects in the rear that one would suppose could not escape, and striking others beyond, and least exposed, in the most unaccountable manner. The details of that great disaster would disclose many curious and

instructive facts. People were found dead without any apparent injury, though lying out in the open fields, and far from the burnt woods. Of course, it is popularly supposed that these suffocated in the superheated atmosphere. However that may be, one circumstance coming under my own observation proves conclusively the presence of electricity, and a very curious action of the subtle fluid, too. Shortly after the fire, the editor of the Green Bay *Advocate* exhibited a copper coin taken from the pocket of one of the victims found dead in the middle of a large clearing. The coin was fused, but no sign of injury whatever was discovered on the man's person.

GEO. GIBSON.

Hudson, Wis., Oct. 22.

[Is it not possible that the coin was fused before it went into the unfortunate man's pocket? — ED.]

A Lightning Discharge in Quebec.

As you request observations of lightning, I take occasion to send you some made by myself. On the 29th of June, 1887, a violent thunder-storm broke over Quebec about six o'clock in the evening. The wind was blowing from the west. At Levis, opposite Quebec, a church was being built at that time, and the wood-work of the tower had just been finished. The roof was finished, and it was covered with galvanized iron. This sheathing was connected by lightning-rods with the earth. The first fall of rain wet the west portion of the tower; and, in an instant after, the lightning struck the tower, leaving intact the east portion, but shattering completely all those parts of the wood rendered semi-conducting by the rain. After reaching the metallic covering of the roof, the electricity was probably conducted by the rods to the earth, as no further trace of it could be found. The great beams of the wood-work had been broken by the discharge, and the wood in great part splintered. The annual rings had separated one from another without any trace of carbonization.

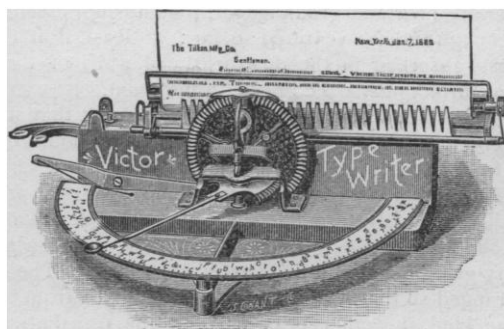
J. C. K. LAFLAMME.

Quebec, Oct. 20.

INDUSTRIAL NOTES.

The Victor Type-Writer.

A FEW years ago there was only one type-writer on the market; but such has been the activity of inventors, that there are now a score or more to be had, so that the most varied tastes in type-writers may easily be satisfied. The older and better-known key machines, familiar in all business-offices, still maintain their leader-



ship, though they are closely followed by machines of more recent invention. The most recent of these key type-writers was described in these columns a few weeks ago.

In some of the key-board machines there is a key for each character, as the Caligraph, the Yost, and the Automatic. In others a shifting or changing device gives two or three characters for each key, as the Remington, the Hammond, and others. The keys on these machines, therefore, range in number from thirty to eighty or more.

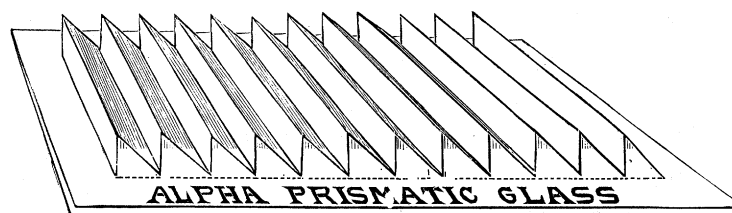
There is another class of type-writers in the market, without a key-board, in which the character to be printed is first sought out

on an index, and the impression is made either by pressing down the pointer when in the proper position, or by moving with the left hand some device which presses the type against the paper. Of this latter variety of the "lever" or single-key class of machines, the Victor type-writer, shown in the illustration, is a good example. The characters, eighty in number, are arranged in three rows on the semi-circular index-plate in front, over which the pointer is moved by the right hand until the desired character is reached. This movement of the pointer is transmitted by gearing to the vertical type-wheel in the centre. The types, which are carried on the ends of radial springs at the periphery of the wheel, are moved around so that when the pointer is over *a*, for instance, on the index, the type *a* is at the printing point. The impression is then produced by pressing with the left hand the finger-piece shown at the left of the engraving. The paper is carried between two rollers on a sliding carriage, which travels behind the type-wheel, moving the proper distance automatically after each impression.

The Victor, though a very cheap machine, prints capitals and small letters, figures and fractions, and punctuation-marks, is simple in construction, small and light, and, for so cheap a machine, prints rapidly and well. This type-writer is one of the interesting exhibits at the American Institute Fair in this city.

Light in Dark Places.

THERE is many a room down in the depths of a city building — for we may measure such buildings in depth from the roof, which is the only part on which sunlight strikes, rather than in height from the sidewalk — where it would be a relief to suffering humanity if an occasional ray of sunlight could be induced to enter. To



say nothing of the basement offices in some of the down-town buildings of New York, let one consider the condition as to light of the average city flat. There is a room in front with windows on the street, and there is a room in the rear with windows on the yard. There are rooms between these extremes with windows, to be sure, but to what purpose is a mystery. These windows open on air-shafts not more than three or four feet wide, and shafts so deep, if you are near the ground floor, that no light seems quite energetic enough to have ventured so far: at least, if it does go down, it rests absorbed in the dust-begrimed walls of the shaft, incapable of turning a sharp corner into the room.

It is now possible to see in this city an experiment that shows it to be perfectly feasible to help a most remarkable amount of these stray rays from the bottom of a black air-shaft into a window at its side. This is done by placing in the window panes of prismatic glass like that we illustrate. The effect is, that a newspaper may be read at the farther side of the room, whereas, with a window of the ordinary glass, reading in any part is impossible. The experiment is arranged so that, when a shutter is removed from the window of one kind, the other is closed, and the transformation is striking.

New Electric Railways.

DURING the past few weeks the Thomson-Houston Electric Company of Boston has completed the electrical equipment of a number of street-railways, on which the electric cars are now in daily operation. Among them are the following: Central Railway, Peoria, Ill.; Citizens' Electrical Street Railway, Decatur, Ill.; Metropolitan Street Railway, Kansas City, Mo.; Omaha Motor Railway, Omaha, Neb.; Ottumwa Street Railway, Ottumwa, Ill.; Quincy Street Railway, Quincy, Mass.; Richmond Street Railway, Richmond, Ind. The total number of cars in use on these roads is 63; and

the number of miles operated, about 44. The company has also closed the following important contracts: Albany City Railway, Albany, N.Y.; City Electric Street Railway, Nashville, Tenn.; Kearney Street Railway Company, Kearney, Neb.; Macon City & Suburban Railway Company, Macon, Ga.; Metropolitan Street Railway, Toronto, Ont.; St. Paul City Railway Company, St. Paul, Minn.; St. Paul & Minneapolis Railway, St. Paul, Minn.; Union Depot Railway, St. Louis, Mo. The number of cars in use on these roads is 116; and the number of miles operated, about 114. This gives a grand total of 179 cars, running or contracted for, and 158 miles of track.

A contract has been recently closed for an electric railway at San José, Cal., which is the first Thomson-Houston road in the State. As one electric railway has already failed in this city, the selection of another was not made without careful investigation, which resulted in making the contract with the Thomson-Houston Electric Company. Ornamental double-bracket iron poles will be used, and nothing will be left undone in making the road a model in every respect.

The Julien Electric Traction Company.

IN view of the recent decision of Judge Lacombe, assigning to the Julien Electric Traction Company a definite and specific process of making its storage-batteries as distinguished from other methods, this company have concluded to temporarily suspend the operation of their cars in this city, pending the manufacture of batteries according to the method prescribed by the court. The factory at Camden, they state in a circular to their stockholders, will expedite the manufacture of batteries so as to enable them within a few

weeks to resume operations. In the circular they say, "It is gratifying to know that the court has finally determined the respective rights of this company and the complainants as to the methods to be employed by each in making batteries, more especially as the method we shall now employ is not only practical, but, in the opinion of such competent experts as Professor Cross of the Institute of Technology, Professor Brackett of Princeton College, and Professor Edward Weston of Newark, is superior to the method awarded to the complainant."

The company further state that they find in *L'Ingenieur Conseil* of Oct. 12, just received from abroad, the following information in relation to the granting of prizes at the Universal Exposition at Paris for the different types of accumulators or storage-batteries, which is translated as follows: "The official list of prizes distributed to exhibitors has just been published. We give herewith the award of merit which the jury has assigned to the different manufacturers of accumulators: grand prize, M. Gaston Planté (deceased); gold medal, The Société l'Électrique of Brussels, who manufacture the Julien accumulators; silver medals, The Electric Power Storage Company of London, which exploits the Faure-Sellon-Volckmar accumulators; silver medal, to the French Société of Accumulators (Phillipart Brothers), who exploit in France the Faure-Sellon-Volckmar accumulators. Silver medals were also awarded to M. Gadot, who also exploits the Faure-Sellon-Volckmar accumulators in France; and to M. Emile Regnier, who exploits accumulators of his own system. The other manufacturers of accumulators obtained either bronze medals or honorable mention. When we consider that the grand prize was given to M. Planté purely as an honor to the memory of a *savant* who in 1859 invented the secondary pile, the highest distinction was in reality granted to L'Électrique (or Julien) in this important branch of electricity."